PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference pct25025	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IT02/00306	International filing date *(day/month/year)* 09.05.2002	Priority date *(day/month/year)* 18.01.2002
International Patent Classification (IPC) or both national classification and IPC G01V9/00		
Applicant INTELLIGENCE DEVICES S.R.L. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
11.08.2003	09.10.2003
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Baumann, M Telephone No. +49 89 2399-2447

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IT02/00306

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-13 as originally filed

Claims, Numbers

1-29 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-29
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-29
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-29
	No:	Claims	

2. Citations and explanations

   see separate sheet

Prior Art

Reference is made to the following documents:

D1: LI P ET AL: 'INFRARED IMAGING OF BURIED OBJECTS BY THERMAL STEP-FUNCTION EXCITATIONS' APPLIED OPTICS, OPTICAL SOCIETY OF AMERICA,WASHINGTON, US, vol. 34, no. 25, 1 September 1995 (1995-09-01), pages 5809-5816, XP000523008 ISSN: 0003-6935

D2: DE 100 32 698 A (SCHRODT STEPHAN) 17 January 2002 (2002-01-17)

D3: US-A-3 217 550 (BIRMAN JOSEPH H) 16 November 1965 (1965-11-16)

D4: EP-A-0 825 459 (SUMITOMO ELECTRIC INDUSTRIES) 25 February 1998 (1998-02-25)

D5: GB-A-2 294 604 (MARCONI GEC LTD) 1 May 1996 (1996-05-01)

Re Item V (novelty, inventive step, industrial applicability)

1. Technical field: Thermographical object remote sensing.

The closest prior art document, D1 describes a method of dynamic infrared imaging of buried objects, whereby the surface area to be surveyed is subjected to a step-functional thermal excitation and the temperature of the surface is measured at different times during and after the excitation. The measured temperature vs. time curves or surface images are processed by forming the temperature difference from the images during and after the thermal excitation.

The subject-matter of claim 1 differs from D1 in that the following method steps are carried out:

- summation of maps of surface thermal radiation measured at two different times,
- substraction of a thermal radiation map measured at a third time from the result of sais summation, thus obtaining a resulting map
- comparison of the values of each portion of the resulting map with a threshold value of radiation intensity corresponding to particular material, and finally
- identifying the object's material as resulting from the prior comparison.

The dynamical thermal mapping method as defined in **claim 1** allows to rapidly determine the position of sought objects with high increased accuracy compared to prior art documents.

These features are neither known nor suggested by the documents D2-D5 cited in the international search report.

D2 relates to the detection of buried objects by subjecting the investigated area to high-energy electromagnetic waves to cause the buried objects to emit thermal radiation which is measured through time. D3 describes a geophysical prospecting method permitting the detection and location of anomalous bodies located beneath the earth's surface. The temperature at the surface at different time is measured and a map of temperature differences is computed. In D2 and D3, no details about the data processing is given. D4 and D5 both relating to static thermal imaging techniques applied to locate hidden objects are less relevant and therefore only of interest as background information.

Claim 1 therefore is novel and involves an inventive step in the sense of Article 33(2) and (3) PCT. Similar arguments apply to the corresponding apparatus **claims 26 and 29**. Furthermore, the computer program suitable for performing the novel and inventive method (**claim 27**) and the memory support storing said program (**claim 28**) are therefore also novel and inventive in the sense of Article 33(2) and (3) PCT.

2. **Claims 2-25 are dependent on claims 1** and as such also meet the requirements of the PCT with respect to novelty and inventive step (Article 33(2) and (3) PCT).

3. The application as defined in claims 1 to 29 is doubtless industrially applicable (Article 33(4) PCT).